

Short and long term complications of abdominal and vaginal hysterectomy for benign disease

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ABSTRACT

Objectives: To describe the indications, short, intermediate and long term complications for total abdominal versus vaginal hysterectomy, in women with benign pelvic disease.

Methods: This study was carried out at King Fahad National Guard Hospital, Riyadh, Kingdom of Saudi Arabia. Chart review was conducted from 1995 to 1999, for all patients who had hysterectomy for benign disease. We compared indications, short, intermediate and long term complications of total abdominal versus vaginal hysterectomy. A total of 108 patients who had hysterectomy were available for analysis. Group one consisted of patients who had total abdominal hysterectomy (N=82), and group 2 consisted of patients who had vaginal hysterectomy (N=26).

Results: The principle indication for the vaginal hysterectomy was uterine prolapse 81%, which occurs in women >45-years-old. While, the most common indications for the total abdominal hysterectomy were menstrual disorders and uterine fibroids 56%, which occur in women <45-years-old. The overall complication rates were 51.2% and 23.1%, in women who underwent total abdominal hysterectomy and vaginal hysterectomy

($p=0.01$, odds ratio = 3.5). Twelve patients (14.6%) required 2nd intervention or rehospitalization, or both, in the total abdominal hysterectomy group, while none were required in the vaginal hysterectomy group. Febrile morbidity formed the major category of the postoperative complications in our study, total incidence was 27.8% (30/108). No statistically significant differences were noted between the total abdominal hysterectomy [30.1% (25/82)] and the vaginal hysterectomy groups [19.2% (5/26), ($p=0.3$)], nor for women who received antibiotic prophylaxis [25.5% (14/55)] and women who did not [28.3% (15/53), ($p=0.7$)].

Conclusions: Vaginal hysterectomy is associated with less intraoperative, intermediate and late complication rates than total abdominal hysterectomy. No significant differences in postoperative febrile morbidity, but significantly shorter hospitalization were noted among women who received antibiotic prophylaxis compared to those who did not.

Keywords: Hysterectomy, abdominal, vaginal, indications, complications.

Saudi Med J 2002; Vol. 23 (7): 806-810

Hysterectomy is one of the most frequently performed surgical procedures among women of reproductive age. In the 1970s one in 3 women in the United States of America, and one in 5 women in the United Kingdom, had a hysterectomy before the age

of 60.^{1,2} Wood et al,³ noted a 30% decline between 1976 and 1986 in hysterectomies. This decline was due to greater use of medical control of menorrhagia and dysfunctional uterine bleeding, myomectomy, and the increase in the use of the endometrial

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Received 8th December 2001. Accepted for publication in final form 27th January 2002.

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ablation. Several studies have examined the risk of morbidity after vaginal or abdominal hysterectomy for benign conditions. These studies generally found vaginal hysterectomy (VH) associated with more morbidity than abdominal hysterectomy.^{4-6,13} While others found lesser complications of vaginal versus abdominal hysterectomy.⁷ The aims of this retrospective study were to compare indications, short, intermediate and long term morbidity after total abdominal versus VH, at our center.

Methods. From January 1995 to December 1999, hospital records for all women who had hysterectomy for non-emergency and benign pelvic disease at the King Fahad National Guard Hospital, Riyadh, Kingdom of Saudi Arabia, were reviewed. Patients undergoing concomitant surgery for urinary incontinence were excluded. We included patients who followed-up for a minimum of 12 months after the procedures. Of the 163 patients eligible for enrollment, 55 patients were excluded. This was due to loss to follow-up (N=25), sub total abdominal hysterectomy (N=5), unexpected endometrial malignancy (N=4), and laparoscopically assisted VH (N=11). One hundred and eight patients, aged 37 to 80 years, with mean length of follow-up 14.8 ± 8.4 months were included. The patients were divided into 2 groups. Group one: Women who had total abdominal hysterectomy (TAH), (N=82), and group 2: Women who had VH, (N=26). The characteristics of both groups are shown in **Table 1**. The indications for hysterectomy are shown in **Table 2**. The procedures were performed by 12 different senior gynecologists at the same center. Seventy-nine patients (96.3%) had TAH performed under general anesthesia, while 3 patients (3.7%) had it under

epidural. Twenty-two patients (84.6%) had VH performed under general anesthesia, while 4 patients (15.4%), had it under spinal anesthesia. Of the women who had a VH, 47% underwent anterior, posterior, or both, vaginal repair, while 52% of women who had a TAH underwent removal of one or both ovaries at the same time. Thirty-nine patients (47.6%) in the TAH group, and 16 patients (61.5%) in the VH group, received single doses of intravenous antibiotic prophylaxis (1g or 2g Cefazolin).

Data analysis. We divided complications into 4 main periods as follows: Intraoperative, immediate postoperative during hospital stay, intermediate during convalescence 4 weeks to 6 weeks at home, and late >7 weeks post discharge as shown in **Tables 3, 4, 5 & 6**. We defined categorical complications as follows: Febrile morbidity-oral temperature of $100.4^{\circ}\text{F}/38^{\circ}\text{C}$ on 2 occasions at least 4 hours apart excluding the first 24 hours, unexplained fever was defined, when there was no specific focus of infection. Infections at the site of operation were classified as incisional; wound infection or vaginal cuff infections. Intraoperative blood loss > 500 ml or postoperative hemorrhage, or both requiring blood transfusion. Intraoperative, relaparotomy, or both for repair of injured bowel, bladder, ureter, fistula and incisional hernia. Data was analyzed using Student's t-test. Comparisons between groups were performed by Fisher's exact and chi-square tests. Two-tailed tests were used and a $p < 0.05$ was considered statistically significant.

Results. A total of 108 women who met the inclusion criteria were available for analysis. Group one (N=82), consisted of women who had TAH, and group 2 (N=26), consisted of women who had VH.

Table 1 - Characteristics of patients who had hysterectomy by abdominal (TAH) and vaginal (VH) approach.

Characteristics	Abdominal N=82	Vaginal N=26
Age (years)	49.8 \pm 8.2	56.1 \pm 8.6*
Parity	6.6 \pm 3.5	6.7 \pm 3.4
Body mass index (kg/m ²)	31.6 \pm 7.3	28.1 \pm 5.3*
Operative time (min)	131.9 \pm 44	143.3 \pm 34.7
Blood loss (ml)	364.6 \pm 203	484.6 \pm 326*
N of patients needing blood transfusion (%)	2 (2.4)	1 (3.8)
Previous laparotomy (%)	18 (22)	4 (15.4)
Hospital stay (days)	10.8 \pm 5.4	9.6 \pm 5.2

Values are means \pm SD, * $p < 0.05$, N - number, TAH - total abdominal hysterectomy, VH - vaginal hysterectomy.

Table 2 - Indications for hysterectomy.

Characteristics	Abdominal N=82 N (%)	Vaginal N=26 N (%)
Menorrhagia + fibroid	18 (22)	1 (3.8)
PMB	15 (18.3)	2 (7.7)
DUB	14 (17)	1 (3.8)
Benign ovarian tumor	10 (12.2)	0 (0)
Pelvic pain	8 (9.8)	0 (0)
Menorrhagia	9 (11)	1 (3.8)
Dysmenorrhea	4 (4.9)	0 (0)
Molar pregnancy	3 (3.7)	0 (0)
A symptomatic fibroid	1 (1.2)	0 (0)
Uterine prolapse	0 (0)	21 (80.8)
Total	82 (100)	26 (100)

PMB - post menopausal bleeding
DUB - dysfunctional uterine bleeding, N - number

No differences were found between both groups in patient parity, operative time, hospital stay, previous laparotomy and number of patients who needed blood transfusion (Table 1). There was a significant increase of age ($p < 0.01$), and total blood loss ($p < 0.05$), in the VH group compared to the TAH group (Table 1). There was a significant reduction of body mass index (BMI), ($p < 0.05$), in the VH group (Table 1). Intraoperative, immediate, intermediate and late complications occurred in 25 patients (23.1%), 31 patients (28.7%), 4 patients (3.7%), and 8 patients (7.4%) of the total study population (Tables 3, 4, 5 & 6). Postoperative infections occurred in 30 patients (27.8%) of the total study population; 25 patients (30.1%) in the TAH group, and 5 patients (19.2%) in the VH group, with no significant differences between both groups (Tables 4 & 5). Overall, 55 patients (51%) received antibiotic prophylaxis, 39/82 patients in the TAH group and 16/26 patients in the VH group. Fourteen patients (25.5%) who received antibiotic prophylaxis contracted infections, were compared with 15 patients (28.3%) who did not receive antibiotic prophylaxis. No significant differences were noted between both groups (Tables 7 & 8).

Intraoperative complications. In the TAH group 3 patients had ureteric, one had small bowel and one had bladder injuries. These injuries were detected and repaired during the primary operation. No statistically significant differences were found between both groups in blood loss > 500 ml and the total blood loss (Table 3).

Immediate postoperative complications during hospital stay. No statistically significant differences were found between both groups in urinary tract (UTI) and wound infections and unexplained fever ($p = 0.6$), these patients were treated with oral antibiotics. Two patients had pelvic abscess in the TAH group treated by vaginal drainage (Table 4). None of our study population had life-threatening events, namely no intraoperative or postoperative cardiac or respiratory arrest, myocardial infarction, pulmonary infarct or embolus, anaphylactic shock or disseminated intravascular coagulation.

Intermediate (4 weeks - 6 weeks) complications post discharge. Two patients in the TAH group had UTI at home, and both had prophylactic antibiotics during the primary procedure, while none were reported in the VH group. Readmission to the hospital was necessary for 2 patients in the TAH group, one for incisional hernia and one for ureterovaginal fistula repair, while, there were no readmissions in the VH group (Table 5).

Late (≥ 7 weeks) complications post discharge. Eight patients (9.8%) in the TAH group had complications. Three patients required re-admission for incisional and vesicovaginal fistula repair, while there were none in the VH group (Table 6).

Table 3 - Intraoperative complications during hysterectomy.

Complications	Abdominal N=82 N (%)	Vaginal N=26 N (%)
Bleeding ≥ 500 ml	12 (14.6)	8 (30.8)
Ureteric injury	3 (3.7)	0 (0)
Small bowel injury	1 (1.4)	0 (0)
Bladder injury	1 (1.4)	0 (0)
Total	17 (21.1)	8 (30.8)
N - number		

Table 4 - Immediate postoperative complications during the same hospitalization for hysterectomy.

Postoperative complications	Abdominal N=82 N (%)	Vaginal N=26 N (%)
UTI	8 (9.8)	1 (3.9)
Wound Infection	8 (9.8)	1 (3.9)
Unexplained fever	5 (6.1)	3 (11.5)
Pelvic abscess	2 (2.4)	0 (0)
N of patients needed blood transfusion	2 (2.4)	1 (3.9)
Total	25 (30.5)	6 (23.1)
UTI - urinary tract infection $p > 0.05$; N - number		

Table 5 - Intermediate complications 4-6 weeks post discharge following hysterectomy.

Intermediate complications	Abdominal N=82 N (%)	Vaginal N=26 N (%)
UTI	2 (2.4)	0 (0)
Incisional hernia	1 (1.2)	0 (0)
Ureterovaginal fistula	1 (1.2)	0 (0)
Total	4 (4.8)	0 (0)
UTI - urinary tract infection N - number		

Table 6 - Late complication ≥ 7 weeks post discharge following hysterectomy.

Late complications	Abdominal N=82 N (%)	Vaginal N=26 N (%)
Chronic pelvic pain	3 (3.7)	0 (0)
Incisional hernia	2 (2.4)	0 (0)
Sexual dysfunction	1 (1.2)	0 (0)
Vesicovaginal fistula	1 (1.2)	0 (0)
Painful wound	1 (1.2)	0 (0)
Total	8 (9.7)	0 (0)
N - number		

Table 7 - Postoperative infections and unexplained fever during hospital stay and 4-6 weeks post discharge in patient who had single-dose antibiotic prophylaxis.

Postoperative infections and unexplained fever	Abdominal N=39 N (%)	Vaginal N=16 N (%)
Wound infection	3 (7.7)	1 (6.3)
UTI	4 (10.3)	1 (6.3)
Pelvic abscess	2 (5.1)	0 (0)
Unexplained fever	0 (0)	3 (18.8)
Total	9 (23.1)	5 (31.3)
UTI - urinary tract infection N - number, $p > 0.05$		

Table 8 - Postoperative infections and unexplained fever during hospital stay and 4-6 weeks post discharge in patients who did not receive antibiotic prophylaxis.

Postoperative infections and unexplained fever	Abdominal N=43 N (%)	Vaginal N=10 N (%)
Wound infection	5 (11.6)	0 (0)
UTI	6 (14)	0 (0)
Unexplained fever	4 (9.3)	0 (0)
Total	15 (34.9)	0 (0)
UTI - urinary tract infection N - number, $p > 0.05$		

DISCUSSION. Hysterectomy is one of the most common operations undergone by women, with an expected lifetime prevalence of 10%.⁸ In this retrospective study we compared indications, short, intermediate and long term complications of TAH versus VH. In our study, a total of 108 women had hysterectomy, TAH account for 76% and VH for 24%, this coincided with previous reports.^{9,10} We found that the most common indication for the VH group was uterine prolapse 81%, which occurs in women >45-years-old. While the most common indications for the TAH group were menstrual disorders and uterine fibroids 56%, which occur in women <45-years-old. The overall complication rates were 65.9% and 53.9% in women who underwent TAH and VH. However, if we exclude the patients who had intraoperative blood loss >500 ml, with no significant drop in their hemoglobin and not requiring blood transfusion, the overall complication rate will be 51.2% and 23.1% ($p=0.01$, odds ratio = 3.5), in agreement with a previous report.⁷ The incidence of intraoperative complications in our study population was 4.6%, similar to the previous studies 2% to 11%.^{11,12} Total abdominal hysterectomy have more intraoperative complications than VH, 5/82 and 0/26, as shown in **Table 3**, nevertheless, the difference did not reach statistical significance ($p=0.3$). Febrile morbidity formed the major category of the postoperative complications in our study. The total incidence was 27.8%, and no significant differences were noted between the TAH and the VH group 29.3% and 19.2% ($p=0.4$), which is consistent with previous reports in the range of 15.3% to 24.4% and 32.3% to 39.1%.^{7,13} In further subgroup analyses, we found no significant differences among the patients who received antibiotic prophylaxis or those who did not, 25.5% and 28.3% ($p=0.7$) as shown in **Tables 7 & 8**. However, we found the mean hospital stay in patients who received antibiotic prophylaxis was significantly shorter, 9.1 days versus 11.9 days ($p < 0.05$, 95% confidence interval: 0.8 - 4.76). We were unable to demonstrate the benefits of antibiotic prophylaxis with regard to reduction of febrile morbidity in our small series. However, randomized controlled trials support the use of prophylactic antibiotics to significantly reduce postoperative infectious morbidity and length of hospitalization in women undergoing hysterectomy.¹⁴⁻¹⁶ Twelve patients (14.6%), during convalescence at home showed complications related to the procedure in the TAH group, while there was 0% in the VH group (**Tables 4 & 6**). Of those, 5 patients had rehospitalization and repair of incisional hernia, ureterovaginal and vesicovaginal fistula. Five patients had subjective complaints such as pelvic pain, painful wound and sexual problems. After hysterectomy these are difficult to classify as complications related to surgical events, especially when they are reported one year postoperatively.

However, recent reports have recorded improvement in health, quality of life, and sexual and urinary symptoms.^{17,18} Limitations of our study included retrospective design relying on the patients' record data, which probably underestimate the incidence of complications rather than prospective questionnaires to individual patients.

In conclusion, VH is associated with less intermediate and late complication rates than TAH. Nevertheless, we did not show a significant reduction in febrile morbidity. We did however, show a significant decrease in the length of hospitalization among patients who received antibiotic prophylaxis. We recommend patients undergoing abdominal and vaginal hysterectomy should receive antibiotic prophylaxis.

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